12/5/16

"Quality is not an act, it is a habit." -Aristotle

HW: "Rational Inequalities" #8, 12, 20

Test 2 on Tuesday 12/20

AIM: How do we solve Rational Inequalities?

Warm Up:

1) Solve the following:

$$\frac{(6-x)(3+x)}{x+1} \leq 0$$

negatives

$6-x=0$

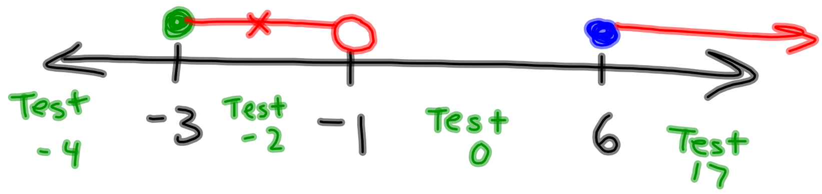
$6=x$

$3+x=0$

$x=-3$

$x+1=0$

$x=-1$



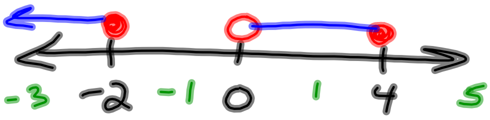

$\frac{(+)(-)}{(-)}$ $\frac{(+)(+)}{(-)}$ $\frac{(+)(+)}{(+)}$ $\frac{(-)(+)}{(+)}$

$+$ $-$ $+$ $-$

SB: $\{x \mid -3 \leq x < -1 \vee x \geq 6\}$

Int: $[-3,-1) \cup [6,\infty)$

10) $\dfrac{x-8}{x}+\dfrac{x-3}{1}\dfrac{(x)}{(x)}\le 0$ negatives




$\dfrac{x-8}{x}+\dfrac{x(x-3)}{x}\le 0$

$\dfrac{x-8+x^2-3x}{x}\le 0$

$\dfrac{x^2-2x-8}{x}\le 0$

$\dfrac{(x-4)(x+2)}{x}\le 0$

$x=4$
$x=-2$
$x=0$

$\dfrac{(-)(-)}{(-)}$ $\dfrac{(-)(+)}{(-)}$ $\dfrac{(-)(+)}{(+)}$ $\dfrac{(+)(+)}{(+)}$

$-$ $+$ $-$ $+$

SB: $\{x \mid x\le -2 \text{ or } 0<x\le 4\}$

Int: $(-\infty,-2]\cup(0,4]$

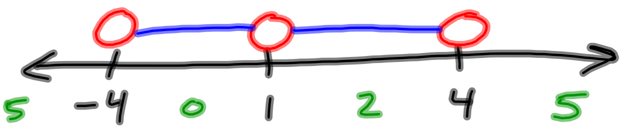
11) $\dfrac{3}{x-2}\le -1$

12) $\dfrac{3x+1}{x-1} \geq 2$

14) $\dfrac{1}{4} < \dfrac{7}{7-x}$

18) $4+\frac{1}{x}\geq\frac{10}{2x}$

8) $\frac{x^2-16}{(x-1)^2} < 0$ negatives




$$\frac{(x-4)(x+4)}{(x-1)(x-1)} < 0$$

$$\frac{(-)(-)}{(-)(-)} \qquad \frac{(-)(+)}{(-)(-)} \qquad \frac{(-)(+)}{(+)(+)} \qquad \frac{(+)(+)}{(+)(+)}$$

$$+ \qquad - \qquad - \qquad +$$

$x = 4$
$x = -4$
$x = 1$